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EXAMINER	
MILORD, MARCEAU	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	**Application No.** 09/699,019	**Applicant(s)** ROFOUGARAN, AHMADREZA	
	Examiner Marceau Milord	**Art Unit** 2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 January 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-66* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,12,13,20-35,46 and 54-66* is/are rejected.

7)☒ Claim(s) *2-11,14-19,36-45 and 47-53* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 12-13, 20-35, 46, 54-61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Coppola (US Patent No 6020783) in view of Davie et al (US Patent No 6278870 B1).

Regarding claim 1, Coppola discloses a notch filter (fig. 1 and fig. 3), comprising: a first filter (15 of fig. 1) to output a plurality of phases of an input signal including a first phase and an inverted first phase (22 of fig. 1;col. 2, line 61- col. 3, line 9; col. 3, lines 18-44; col. 4, lines 42-52); and a second filter (21 of fig. 1) having an input to receive the inverted first phase and an inverted input to receive the first phase (fig. 3; col. 4, lines 27-67; col. 6, lines 31-65).

However, Coppola does not specifically disclose that the first and second filters are polyphase filters.

On the other hand, Davie et al, from the same field of endeavor, discloses a phasing receiver that includes a quadrature mixing arrangement for frequency converting an input or high IF information signal to a pair of quadrature related low IF signals. The low IF signals are applied to a polyphase filter which functions as a low pass and adjacent channel rejection filter. Furthermore, a local oscillator is coupled to the second input of the first mixer and, by way of a 90 degree phase shifter, to a second input of the second mixer. The in-phase products I of mixing present at an output of the first mixer are applied to a first input of a current-fed polyphase filter. The quadrature phase products Q of mixing present at an output of the second mixer are applied to a second input of the filter (figs. 1-2; col. 2, line 27-col. 3, line 21). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Davie to the system of Coppola in order to provide a polyphase filter circuit that can provide a phasing receiver having a sequence asymmetric gyrator filter.

Regarding claims 12-13, Coppola discloses a notch filter (fig. 1), comprising: a first filter (15 of fig. 1) including an input, and an output having a non-inverted output and an inverted output 22 of fig. 1;col. 2, line 61- col. 3, line 9; col. 3, lines 18-44; col. 4, lines 42-52); and a second filter (21 of fig. 1) having an input comprising a non-inverted, the non-inverted output of the first filter being coupled to the input of the second filter and the output of the first filter (fig. 3; col. 4, lines 27-67; col. 6, lines 31-65).

However, Coppola does not specifically disclose that the first and second filters are polyphase filters.

On the other hand, Davie et al, from the same field of endeavor, discloses a phasing receiver that includes a quadrature mixing arrangement for frequency converting an input or high

IF information signal to a pair of quadrature related low IF signals. The low IF signals are applied to a polyphase filter which functions as a low pass and adjacent channel rejection filter. Furthermore, a local oscillator is coupled to the second input of the first mixer and, by way of a 90 degree phase shifter, to a second input of the second mixer. The in-phase products I of mixing present at an output of the first mixer are applied to a first input of a current-fed polyphase filter. The quadrature phase products Q of mixing present at an output of the second mixer are applied to a second input of the filter (figs. 1-2; col. 2, line 27-col. 3, line 21). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Davie to the system of Coppola in order to provide a polyphase filter circuit that can provide a phasing receiver having a sequence asymmetric gyrator filter.

Regarding claims 31-35, Coppola discloses a circuit (fig. 1 and fig. 3), comprising: a mixer having an output including a mixed signal output and an inverted mixed signal output (22 of fig. 1;col. 2, line 61- col. 3, line 9; col. 3, lines 18-44; col. 4, lines 42-52); and a filter (21 of fig. 1) having an input including a non-inverted input coupled to the inverted mixed signal output (fig. 3; col. 4, lines 27-67; col. 6, lines 31-65).

However, Coppola does not specifically disclose that the filter is a polyphase filter.

On the other hand, Davie et al, from the same field of endeavor, discloses a phasing receiver that includes a quadrature mixing arrangement for frequency converting an input or high IF information signal to a pair of quadrature related low IF signals. The low IF signals are applied to a polyphase filter which functions as a low pass and adjacent channel rejection filter. Furthermore, a local oscillator is coupled to the second input of the first mixer and, by way of a 90 degree phase shifter, to a second input of the second mixer. The in-phase products I of mixing

present at an output of the first mixer are applied to a first input of a current-fed polyphase filter. The quadrature phase products Q of mixing present at an output of the second mixer are applied to a second input of the filter (figs. 1-2; col. 2, line 27-col. 3, line 21). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Davie to the system of Coppola in order to provide a polyphase filter circuit that can provide a phasing receiver having a sequence asymmetric gyrator filter.

Regarding claim 46, Coppola discloses a circuit (fig. 1and fig. 3), comprising: a first filter (15 of fig. 1) having an output including a non-inverted output and an inverted input (22 of fig. 1;col. 2, line 61- col. 3, line 9; col. 3, lines 18-44; col. 4, lines 42-52); and a second filter having an input including a non-inverted input coupled to the output of the first polyphase and an input coupled to the non-inverted output of the first polyphase filter (fig. 3; col. 4, lines 27-67; col. 6, lines 31-65).

However, Coppola does not specifically disclose that the first and second filters are polyphase filters.

On the other hand, Davie et al, from the same field of endeavor, discloses a phasing receiver that includes a quadrature mixing arrangement for frequency converting an input or high IF information signal to a pair of quadrature related low IF signals. The low IF signals are applied to a polyphase filter which functions as a low pass and adjacent channel rejection filter. Furthermore, a local oscillator is coupled to the second input of the first mixer and, by way of a 90 degree phase shifter, to a second input of the second mixer. The in-phase products I of mixing present at an output of the first mixer are applied to a first input of a current-fed polyphase filter. The quadrature phase products Q of mixing present at an output of the second mixer are applied

to a second input of the filter (figs. 1-2; col. 2, line 27-col. 3, line 21). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Davie to the system of Coppola in order to provide a polyphase filter circuit that can provide a phasing receiver having a sequence asymmetric gyrator filter.

Regarding claims 54-57, Coppola discloses a circuit (fig. 1 and fig. 3) comprising: mixing means for mixing two signals and outputting a mixed signal and an inverted mixed signal (col. 2, line 61- col. 3, line 9; col. 3, lines 18-44; col. 4, lines 42-52); and filtering means for notching a particular frequency of the mixed signal; and a means for generating a zero at the particular frequency (fig. 3; col. 4, lines 27-67; col. 6, lines 31-65).

However, Coppola does not specifically disclose that the first and second filters are polyphase filters.

On the other hand, Davie et al, from the same field of endeavor, discloses a phasing receiver that includes a quadrature mixing arrangement for frequency converting an input or high IF information signal to a pair of quadrature related low IF signals. The low IF signals are applied to a polyphase filter which functions as a low pass and adjacent channel rejection filter. Furthermore, a local oscillator is coupled to the second input of the first mixer and, by way of a 90 degree phase shifter, to a second input of the second mixer. The in-phase products I of mixing present at an output of the first mixer are applied to a first input of a current-fed polyphase filter. The quadrature phase products Q of mixing present at an output of the second mixer are applied to a second input of the filter (figs. 1-2; col. 2, line 27-col. 3, line 21). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the

technique of Davie to the system of Coppola in order to provide a polyphase filter circuit that can provide a phasing receiver having a sequence asymmetric gyrator filter.

Regarding claim 58, Coppola as modified discloses a circuit (fig. 1and fig. 3) further comprising a third filtering means for attenuating frequencies above a third frequency of the mixed signal, the third frequency being higher than the particular and second frequencies (fig. 3; col. 4, lines 27-67; col. 6, lines 31-65).

Regarding claim 59, Coppola discloses a circuit (fig. 1), comprising: first filtering means (14 of fig. 1) for notching a first frequency of a signal using a first polyphase structure (col. 2, line 61- col. 3, line 9; col. 3, lines 18-44; col. 4, lines 42-52) and second filtering means of the signal using a second filter structure (fig. 3; col. 4, lines 27-67; col. 6, lines 31-65; col. 7, line 26- col. 8, line 13).

However, Coppola does not specifically disclose that the first and second filters are polyphase filters.

Regarding claim 60, Coppola as modified discloses a circuit (fig. 1), wherein the first polyphase structure comprises means for generating a first zero at the first frequency, and the second filter structure comprises means for generating a second zero at the second frequency (fig. 3; col. 4, lines 27-67; col. 6, lines 31-65).

Regarding claim 61, Coppola as modified discloses a circuit (fig. 1), further comprising a third filtering means for attenuating frequencies above a third frequency of the signal, the third frequency being higher than the second frequency (col. 3, line 40- col. 4, line 54).

Regarding claim 20, Coppola discloses a notch filter (fig. 1and fig. 3), comprising: generating means (15 of fig. 1) for generating an output signal comprising a plurality of phases

of an input signal (22 of fig. 1; col. 2, line 61- col. 3, line 9; col. 3, lines 18-44; col. 4, lines 42-52); fig. 3; col. 4, lines 27-67; col. 6, lines 31-65).

However, Coppola does not specifically disclose that the features of notching means for notching a particular frequency of the input signal as a function of the phases.

On the other hand, Davie et al, from the same field of endeavor, discloses a phasing receiver that includes a quadrature mixing arrangement for frequency converting an input or high IF information signal to a pair of quadrature related low IF signals. The low IF signals are applied to a polyphase filter which functions as a low pass and adjacent channel rejection filter. Furthermore, a local oscillator is coupled to the second input of the first mixer and, by way of a 90 degree phase shifter, to a second input of the second mixer. The in-phase products I of mixing present at an output of the first mixer are applied to a first input of a current-fed polyphase filter. The quadrature phase products Q of mixing present at an output of the second mixer are applied to a second input of the filter (figs. 1-2; col. 2, line 27-col. 3, line 21). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Davie to the system of Coppola in order to provide a polyphase filter circuit that can provide a phasing receiver having a sequence asymmetric gyrator filter.

Regarding claim 21, Coppola as modified discloses a notch filter (fig. 1), wherein the input signal comprises a differential signal (22 of fig. 1;col. 2, line 61- col. 3, line 9; col. 3, lines 18-44; col. 4, lines 42-52;col. 7, line 4- col. 8, line 13).); (col. 3, lines 6-32).

Regarding claim 22, Coppola as modified discloses a notch filter (fig. 1), wherein the generating means (15 of fig. 1) further comprises means for generating the output signal with

quadrature outputs when the input signal includes the particular frequency (22 of fig. 1; col. 2, line 61- col. 3, line 9; col. 3, lines 18-44; col. 4, lines 42-52; col. 7, line 4- col. 8, line 13).

Regarding claim 23, Coppola as modified discloses a notch filter (fig. 1and fig. 3), wherein the notching means comprising means for rejecting the quadrature signal at the particular frequency (22 of fig. 1;col. 2, line 61- col. 3, line 9; col. 3, lines 18-44; col. 4, lines 42-52;col. 7, line 4- col. 8, line 13).

Regarding claim 24, Coppola as modified discloses a notch filter (fig. 1and fig. 3), wherein the particular frequency is an odd harmonic of the input signal (22 of fig. 1;col. 2, line 61- col. 3, line 9; col. 3, lines 18-44; col. 4, lines 42-52;col. 7, line 4- col. 8, line 13).

Regarding claim 25, Coppola as modified discloses a notch filter (fig. 1and fig. 3), wherein the particular frequency is a third harmonic of the input signal (col. 7, line 4- col. 8, line 13).

Regarding claim 26, Coppola discloses a method of notching a particular frequency of a signal (fig. 1), comprising: generating (16 of fig. 1) an output signal comprising a plurality of phases of an input signal (22 of fig. 1; col. 2, line 61- col. 3, line 9; col. 3, lines 18-44; col. 4, lines 42-52; col. 7, line 4- col. 8, line 13).

However, Coppola does not specifically disclose that the features of notching a particular frequency of the input signal as a function of the phases.

On the other hand, Davie et al, from the same field of endeavor, discloses a phasing receiver that includes a quadrature mixing arrangement for frequency converting an input or high IF information signal to a pair of quadrature related low IF signals. The low IF signals are applied to a polyphase filter which functions as a low pass and adjacent channel rejection filter.

Furthermore, a local oscillator is coupled to the second input of the first mixer and, by way of a 90 degree phase shifter, to a second input of the second mixer. The in-phase products I of mixing present at an output of the first mixer are applied to a first input of a current-fed polyphase filter. The quadrature phase products Q of mixing present at an output of the second mixer are applied to a second input of the filter (figs. 1-2; col. 2, line 27-col. 3, line 21). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Davie to the system of Coppola in order to provide a polyphase filter circuit that can provide a phasing receiver having a sequence asymmetric gyrator filter.

Regarding claim 27, Coppola discloses a method of notching a particular frequency of a signal (fig. 1 and fig. 3), wherein the generation of the output signals comprises generating the output signal with quadrature outputs when the input signal includes the particular frequency (col. 7, line 4- col. 8, line 13).

Regarding claim 28, Coppola discloses a method of notching a particular frequency of a signal (fig. 1), wherein the notching of the particular frequency comprises rejecting the quadrature signal at the particular frequency (col. 7, line 4- col. 8, line 13).

Regarding claim 29, Coppola as modified discloses a method of notching a particular frequency of a signal (fig. 1), wherein the particular frequency is an odd harmonic of the input signal (col. 7, line 4- col. 8, line 13).

Regarding claim 30, Coppola as modified discloses a method of notching a particular frequency of a signal (fig. 1), wherein the particular frequency is a third harmonic of the input signal (col. 7, line 4- col. 8, line 13).

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claim 62 -66 are rejected under 35 U.S.C. 102(b) as being anticipated by Davie et al (US Patent No 6278870 B1).

Regarding claims 62-66, Davie et al discloses a method of filtering a signal (fig. 1 and fig. 2) comprising notching a particular frequency of the signal using a filter structure (col. 2, lines 26-55; col. 3, line 54-col. 4, line 10).

Allowable Subject Matter

5. Claims 2-11, 14-19, 36-45, 47-53 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

6. Applicant's arguments with respect to claims 1, 20- 35, 46, 54-66 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marceau Milord whose telephone number is 571-272-7853. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward F. Urban can be reached on 571-272-7899. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Marceau Milord/

Primary Examiner, Art Unit 2618

/M. M./

Primary Examiner, Art Unit 2618